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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,546	03/30/2001	Jin-Yuan Lee	MEG2000-012	4705
28112	7590	10/05/2007		
SAILE ACKERMAN LLC 28 DAVIS AVENUE POUGHKEEPSIE, NY 12603			EXAMINER VU, HUNG K	
			ART UNIT 2811	PAPER NUMBER
			MAIL DATE 10/05/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/821,546

Applicant(s)

LEE ET AL.

Examiner

Hung Vu

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/23/07.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) See Continuation Sheet is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) 43-45, 67-69, 135, 137, 138, 153, 154, 185, 186 and 198-200 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continuation of Disposition of Claims: Claims pending in the application are 11-13, 15, 17, 19, 20, 23-25, 42-56, 58, 60-69, 71, 73, 74, 102-107, 109-111, 117-121, 123-129, 132-141, 144-149, 151-154, 156, 158-163, 165-169, 171-175, 177-186, 188, 195-200, 202, 209-211 and 213-234.

Continuation of Disposition of Claims: Claims allowed are 11-13, 15, 17, 19, 20, 23-25, 52-56, 58, 60-62, 102-107, 109-111, 117-121, 123-129, 132, 133, 146-149, 156, 158-163, 169, 171-175, 177-184, 195, 196, 209-211, 213 and 221-227.

Continuation of Disposition of Claims: Claims rejected are 42, 46-51, 63-66, 71, 73, 74, 134, 136, 139-141, 144, 145, 151, 152, 165-168, 188, 197, 202, 214-220 and 228-234.

DETAILED ACTION

Request for Continued Examination

1 A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 07/23/07 has been entered. An action on the RCE follows.

2. The indicated allowability of claims 42, 46-51, 63-66, 71, 73, 74, 134, 136, 139, 140, 141, 144, 145, 151, 152, 165-168, 188, 197, 202, 214-220 and 228-234 is withdrawn in view of the newly discovered reference(s) to Fillion et al. (PN 6,306,680). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 42, 48, 50, 63, 66, 71, 73, 74, 134, 136, 139, 197, 202, 215-219 and 229-233 are rejected under 35 U.S.C. 102(e) as being anticipated by Fillion et al. (PN 6,306,680).

Fillion et al. discloses, as shown in Figures 5, 10, 15 and 22, a method of fabricating a chip package comprising the steps of:

- depositing an adhesive material (126) over a substrate (114);

- joining a first die (102) and the substrate using the adhesive layer, wherein a first opening (120-124) in the substrate exposes a bottom surface of the first die;

- joining a second die (102) and the substrate using the adhesive layer, wherein a second opening (120-124) in the substrate exposes a bottom surface of the second die;

- encapsulating a top and sidewall of the first die, a top surface and sidewall of the second die, and a gap between the first and second dies with a molding material (130), wherein the gap is filled completely with the molding material, and the molding material has a top surface with a first region over the gap and multiple second regions over the first and second dies, the first region being at a same horizontal level as the multiple second regions;

- after the encapsulating the top surface and sidewall of the first die, the top surface and sidewall of the second die, and the gap between the first and second dies with the molding material, separating the substrate into multiple portions [Figures 10 and 22].

Regarding claim 48, Fillion et al. discloses the first opening is formed before the joining the first die and the substrate.

Regarding claim 50, Fillion et al. discloses after the joining the first die and the substrate, further

Art Unit: 2811

comprising depositing a conductive material into the first opening.

Regarding claim 63, Fillion et al. discloses, as shown in Figures 5, 10, 15 and 22, a method of fabricating a chip package comprising the steps of:

joining a die (102), separated from a wafer, and a substrate (114), wherein an opening (120-124) in the substrate exposes a topmost patterned circuit layer of the die;

depositing a conductive material (136) into the opening, wherein the conductive material is used to connect the topmost patterned circuit layer to an external circuitry;

after the joining the die and the substrate, separating the substrate into multiple portions [Figures 10 and 22].

Regarding claim 66, Fillion et al. discloses the external circuitry comprises a next level of packaging.

Regarding claims 71, 202, Fillion et al. discloses after the joining the die and the substrate, further comprising encapsulating the die with a molding material (130).

Regarding claims 73 and 139, Fillion et al. discloses the method further comprising depositing an adhesive material (126) over the substrate, followed by the joining the die and the substrate using the adhesive material.

Art Unit: 2811

Regarding claims 74 and 136, Fillion et al. discloses the opening is formed before the joining the die and the substrate.

Regarding claim 134, Fillion et al. discloses, as shown in Figures 5, 10, 15 and 22, a method of fabricating a chip package comprising the steps of:

- separating a wafer into multiple dies (102);

- after the separating the wafer, joining one of the dies and a substrate (114), an opening (120-124) in the substrate exposing the one of the dies;

- after joining the one of the dies and the substrate, encapsulating a top surface and sidewall of the one of the dies with a molding material (130) [Figure 15];

- after the encapsulating the top surface and sidewall of the one of the dies with the molding material, separating the molding material and the substrate into multiple portions [Figures 10 and 22].

Regarding claim 197, Fillion et al. discloses, as shown in Figures 5, 10, 15 and 22, a method of fabricating a chip package comprising the steps of:

- depositing an adhesive material (126) over a substrate (114);

- after the depositing the adhesive material, joining a die (102), separated from a wafer, and the substrate using the adhesive material, wherein an opening (120-124) in the substrate exposes a topmost patterned circuit layer of the die;

- depositing a conductive material (136) into the opening, wherein the conductive material

Art Unit: 2811

is used to connect the topmost patterned circuit layer to an external circuitry.

Regarding claims 215 and 229, Fillion et al. discloses the adhesive material has a thickness of between of 10 to 20 microns (within the range of between 10 and 100 microns) [Col. 4, lines 29-39].

Regarding claims 216 and 230, Fillion et al. discloses the adhesive material comprises polyimide [polymeric, Col. 4, lines 29-39].

Regarding claims 217 and 231, Fillion et al. discloses the adhesive material comprises a thermocompression material [Col. 4, lines 29-39].

Regarding claims 218 and 232, Fillion et al. discloses the molding material comprises resin [Col. 4, lines 51-67].

Regarding claims 219 and 233, Fillion et al. discloses the molding material comprises epoxy [Col. 4, lines 51-67].

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 2811

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 46, 47, 49, 51, 64, 65, 140, 141, 144, 145, 151, 152, 165-168, 188, 214, 220, 228 and 234 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fillion et al. (PN 6,306,680).

Regarding claims 46, 49, 51, 64, 65, 140, 144, 168 and 220, Fillion discloses the claimed invention including the method of fabricating a chip package. Fillion et al. does not disclose the material of the ball, the conductive material, the substrate or the molding. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the device of Fillion et al. having the materials as that claimed by Applicant, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Regarding claims 47, 141, 165 and 234, although Fillion et al. does not teach the thickness of the substrate or the molding, as that claimed by Applicants, however, it would have been obvious to one having ordinary skill in the art at the time the invention was made to form the substrate or the molding having a desired thickness, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 145, 151, 152, 166, 167, 188, 214 and 228, Fillion discloses the claimed invention including the method of fabricating a chip package. Fillion et al. further discloses the opening is formed by any suitable means. Fillion et al. does not disclose the opening is formed

Art Unit: 2811

using a process comprising mechanical drilling or laser drilling and depositing the adhesive material over the substrate comprises printing. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the opening and adhesive material of Fillion et al. using a process as claimed in order to improve the processing time.

Allowable Subject Matter

5. Claims 11-13, 15, 17, 19, 20, 23-25, 52-56, 58, 60-62, 102-107, 109-111, 117-121, 123-129, 132, 133, 146-149, 156, 158-163, 169, 171-175, 177-184, 195, 196, 209-211, 213, 221-227 are allowed.

6. Claims 43-45, 67-69, 135, 137, 138, 153, 154, 185, 186 and 198-200 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to claim 42 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Vu whose telephone number is (571) 272-1666. The examiner can normally be reached on Monday to Thursday 6:00-4:30.

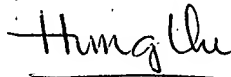
Art Unit: 2811

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on (571) 272 - 1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vu

September 26, 2007



Hung Vu

Primary Examiner